



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/630,796

07/31/2003

Kenji Shimizu

Q71412

9751

23373

7590

06/18/2004

SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

RICKMAN, HOLLY C

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 06/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/630,796

Applicant(s)

SHIMIZU ET AL.

Examiner

Holly Rickman

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8 and 10-12 is/are rejected.
- 7) ☒ Claim(s) 3 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 is rendered indefinite by the use of the relative term "fine." The term "fine" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 12 is rendered indefinite by the use of the phrase "single pole type head." It has been held that the addition of the word "type" to an otherwise definite expression extends the scope of the expression so as to render it indefinite. *Ex parte Copenhaver*, 109 USPQ 118 (Bd. App. 1955).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 5-6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al. (US 6524724) in view of Do et al. (US 6537638).

Cheng et al. disclose a perpendicular magnetic recording medium having a substrate, an intermediate layer formed from CoCrTa containing a minimum of 54 at% Co (corresponds to claimed "orientation control" layer), a CoPt alloy magnetic layer, and a protective overcoat (col. 1, lines 14-19; col. 4, lines 56-57; col. 6, lines 20-31 and lines 56-59). The reference is silent with respect to the use of a soft magnetic layer between the substrate and the intermediate layer.

Do et al. teach that it is known in the art to add a soft magnetic layer between the substrate and an overlying layer in a perpendicular magnetic recording medium in order to provide a flux return path for the magnetic head for use therewith (col. 3, line 65 to col. 4, line 9).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a soft magnetic layer to the structure taught by Cheng et al. in order to provide a flux return path for the magnetic field from the read/write head.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al. (US 6524724) in view of Do et al. (US 6537638) and further in view of Tanahashi et al. (US 6723457).

The combination of Cheng et al. in view of Do et al. teaches all of the limitations of the claim except for the use of a single-pole magnetic head.

Tanahashi et al. teach that it is known in the art that the use of a single-pole head in combination with a perpendicular magnetic recording medium having a soft magnetic underlayer allows for high density recording (col. 1, lines 30-34).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the magnetic recording medium taught by the combination of Cheng et al. in view of Do et al. with a single-pole magnetic head in order to provide a functional disk drive apparatus for high density recording.

6. Claims 1, 4, 7, and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyasu et al. (US 6670055) in view of Do et al. (US 6537638).

Tomiyasu et al. disclose a perpendicular magnetic recording medium having a substrate, a seedlayer for controlling the crystal grain diameter of the overlying layers formed from a nonmagnetic material such as CoTi or CoHf, an intermediate layer formed from a CoCr alloy, a magnetic layer formed from a CoPt alloy, and a protective overcoat (col. 4, lines 50-57; col. 6, lines 28-32 and lines 48-56). The reference is silent with respect to the use of a soft magnetic layer between the substrate and the intermediate layer.

Do et al. teach that it is known in the art to add a soft magnetic layer between the substrate and an overlying layer in a perpendicular magnetic recording medium in order to provide a flux return path for the magnetic head for use therewith (col. 3, line 65 to col. 4, line 9).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a soft magnetic layer to the structure taught by Tomiyasu et al. in order to provide a flux return path for the magnetic field from the read/write head.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyasu et al. (US 6670055) in view of Do et al. (US 6537638) and further in view of Cheng et al. (US 6524724).

The combination of Tomiyasu et al. in view of Do et al. teaches all of the limitations of the claim except for the use of a CoCrPtB intermediate layer. Instead, Tomiyasu et al. teach the use of CoCr, CoCrNb, "or the like" – see col. 6, lines 52-53.

Cheng et al. teach the equivalence of CoCr and CoCrPtB for use as an intermediate layer in a perpendicular magnetic recording medium (col. 8, line 30-33).

It would have been obvious to one of ordinary skill in the art at the time of invention to substitute CoCrPtB for the CoCr layer taught by Tomiyasu et al. in view of the art recognized equivalence of the two materials.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomiyasu et al. (US 6670055) in view of Do et al. (US 6537638) and further in view of Tanahashi et al. (US 6723457).

The combination of Tomiyasu et al. in view of Do et al. teaches all of the limitations of the claim except for the use of a single-pole magnetic head.

Tanahashi et al. teach that it is known in the art that the use of a single-pole head in combination with a perpendicular magnetic recording medium having a soft magnetic underlayer allows for high density recording (col. 1, lines 30-34).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the magnetic recording medium taught by the combination of Tomiyasu et al. in view of Do et al. with a single-pole magnetic head in order to provide a functional disk drive apparatus for high density recording.

***Allowable Subject Matter***

9. Claims 3 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1773

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Holly Rickman", with a stylized flourish at the end.

Holly Rickman  
Primary Examiner  
Art Unit 1773

hr  
June 9, 2004